835.1.01 Related References

A. Standard Specifications

General Provisions 101 through 150.

B. Referenced Documents

ASTM D 480

835.2 Materials

835.2.01 Aluminum Powder

A. Requirements

1. Type

   Use an aluminum powder for expanded mortar that is commercially pure, nonleafing, unpolished, and has a low grease content.

2. Gradation

   Ensure the gradation of the coarse particles meets the following:

   - Not more than 0.2 percent retained on the No. 100 (150 µm) sieve
   - Not more than 10 percent retained on the No. 325 (150 µm) sieve

B. Fabrication

General Provisions 101 through 150.

C. Acceptance

Test as follows:

Test	Method
Fineness	ASTM D 480

D. Materials Warranty

General Provisions 101 through 150.

Section 836—Special Surface Coating for Concrete

836.1 General Description

This section includes the requirements for products used to produce a decorative, protective, water-repellent, masonry-like textured finish on specified surfaces.

836.1.01 Related References

A. Standard Specifications

General Provisions 101 through 150.

B. Referenced Documents

Interim Federal Specification TT-P-0035

Federal Specification TT-C-555B

GDT 71

QPL 17

836.2 Materials

836.2.01 Surface Coatings

A. Requirements

1. Type

   Use a surface coating material that is fine- to heavy-textured and forms a tough adhesive bond to the concrete. For a list of sources, see QPL 17.

   a. Use material that has the following characteristics:

Application rate	50 (± 10) ft²/gal [1.25 (± 0.25) m²/L] without run or sag on vertical surfaces
Dry film thickness (minimum)	15 mils (0.38 mm) at application rate of 50 ft²/gal (1.25 m²/L)
Color	Lusterless gray that matches Federal Standard color No. 36622 (unless specified otherwise on the Plans)

   b. Use grout-type coatings that meet the requirements of Interim Federal Specification TT-P-0035.

   c. Use paint-type coatings that meet the requirements of Federal Specification TT-C-555B.

2. Classification

   Classify special surface coatings as either Class A or B with these compositional characteristics.

   a. Class A—Acrylic Polymer Modified Portland Cement Grout: An adhesive grout of Portland cement, acrylic polymer modifiers, masonry sand, and water.

      Add acrylic polymer modifiers to the cement grout in the form of an emulsion.

   b. Class B—Organic Resin Binder-Type Coating: Pigmented organic binders with suitable texturing agents. Further classify the coatings by solvent/thinner type and resin type.

      1) Type 1—Acrylic Emulsion: A pigmented, 100 percent acrylic polymer with suitable texturing aggregate additions. Do not use polyvinyl acetate and styrene butadiene polymers as modifying agents.

      2) Type 2—Organic Solvent Thinned Vinyl toluene/acrylate copolymer: Pigmented binder in compatible organic solvents with suitable texturing aggregate additions. Use an emulsion polymerization process to form the resinous binder.

3. Submit certified test reports of coating materials from an approved independent laboratory. Submit the results of tests required in this Section and in the referenced Federal Specification.

   a. If the manufacturer that produces the coating changes the formula, submit new certified test reports.

   b. Certify to the following quantitative characteristics:

      - Total solids, percent by weight of the paint
      - Vehicle, percent by weight of the paint
      - Vehicle solids, percent by weight of the vehicle
      - Unit weight

B. Fabrication

General Provisions 101 through 150.

C. Acceptance

Submit to the Engineer the manufacturer's certified test results meeting the applicable Federal Specification and the following requirements when tested according to GDT 71:

1. Freeze-Thaw Resistance: No evidence of cracking, checking, pitting, or adhesion loss after 50 freeze-thaw cycles.
2. Accelerated Weathering: No evidence of cracking, checking, or adhesion loss; no more than slight discoloration after 5000 hours of exposure in a Twin Arc Weatherometer. Use the Weatherometer procedure in GDT 71.

In addition to the previous requirements, no coating will be approved before it completes a two-year field test installation.

D. Materials Warranty

General Provisions 101 through 150.

Section 837—Polymer Concrete

837.1 General Description

This section includes the requirements for polymer concrete.

837.1.01 Related References

A. Standard Specifications

General Provisions 101 through 150.

B. Referenced Documents

AASHTO T 97

ASTM C 109 or C 31

ASTM C 140

ASTM C 531

ASTM C 807

837.2 Materials

837.2.01 Polymer Concrete

A. Requirements

1. Type

   Use a methyl methacrylate (MMA) or polyester polymer concrete that bonds to the substrate with the manufacturer's recommended primer.

   a. Use a polymer concrete that combines a two-component, solvent-free resin and selected clean, dry aggregate.
   b. Use a primer that is a two-component system recommended by the polymer concrete manufacturer. After mixing, apply it with brushes or another suitable method.
   c. Use a primer that is tack-free within one hour of mixing.
   d. Before adding dry aggregate at the job site to increase yield, get approval from the Office of Materials and Research.

2. Physical Characteristics

   Use a polymer concrete similar in color to Portland cement concrete.

   a. Use a polymer that can be mixed and placed like Portland cement concrete.
   b. Ensure that the polymer concrete meets the following requirements:

Characteristic	Requirement
Initial setting time Final setting time	12 minutes minimum 60 minutes maximum
Flexural strength	1,100 psi (7.5 MPa) minimum in 24hours
Minimum compressive strength, 75 °F, ± 5 °F (25 °C, ±3 °C), at:	Compressive Strength—psi (MPa)
2 hours 24 hours 7 days (air cure) 7 days (moist cure)	2,000 psi (15 MPa) 5,000 psi (35 MPa) 6,000 psi (40 MPa) 6,000 psi (40 MPa)